

THE CLAIMS

What is claimed is:

- 5 1. A method of obtaining a supply of a synthetic combustible gas having enhanced combustion properties, which method comprises:
- providing a fluid containing a carbonaceous material therein;
- creating an electric arc between spaced electrodes under the fluid to generate a combustible gas; and
- 10 collecting the gas to obtain the supply of the combustible gas.
2. The method of claim 1, which further comprises providing one of the electrodes as a consumable carbon material.
- 15 3. The method of claim 2, wherein the consumable carbon electrode is an anode and is advanced as the electrode is consumed in order to maintain a desired spacing between the electrodes.
- 20 4. The method of claim 3, which further comprises replenishing the consumable carbon anode as it is consumed so that the arc can be essentially continuously operated at a constant voltage.
- 25 5. The method of claim 1, wherein the carbonaceous material comprises at least one of coal, sewage, a hydrocarbon, or a glycol, and is optionally present in the fluid in combination with a surfactant.
- 30 6. The method of claim 5, which further comprises directing the fluid through the arc to optimize conversion of the carbonaceous material to the gas.
7. The method of claim 1, which further comprises subjecting the fluid to pressure which is sufficiently increased to provide an increased gas generation efficiency over operation at atmospheric pressure.

8. The method of claim 7, wherein the carbonaceous material comprises carbon material in elemental or organic form.

9. A method of obtaining a supply of a synthetic combustible gas having enhanced combustion properties, which method comprises:

creating an electric arc between spaced electrodes under a fluid and a carbonaceous material to generate a combustible gas;

directing the fluid to flow through the arc to optimize conversion of the carbonaceous material to increase the efficiency of generation of the combustible gas; and collecting the gas to obtain the supply of combustible gas.

10. The method of claim 9, which further comprises providing one of the electrodes as a consumable carbon material.

11. The method of claim 10, wherein the consumable carbon electrode is an anode and is advanced as the electrode is consumed in order to maintain a desired spacing between the electrodes.

12. The method of claim 11, which further comprises replenishing the consumable carbon anode as it is consumed so that the arc can be essentially continuously operated at a constant voltage.

13. The method of claim 9, wherein the carbonaceous material comprises at least one of coal, sewage, a hydrocarbon, or a glycol, and is optionally present in the fluid in combination with a surfactant.

14. The method of claim 9, wherein the fluid is pumped through the arc at a rate sufficient to reduce arc temperature and prolong electrode life.

15. The method of claim 9, which further comprises subjecting the fluid to pressure which is sufficiently increased to provide an increased gas generation efficiency over operation at atmospheric pressure.

16. A method of obtaining a supply of a synthetic combustible gas having enhanced combustion properties, which method comprises:

creating an electric arc between spaced electrodes under a fluid, wherein at least one electrode is an anode of consumable carbon material;

5 moving the anode to maintain the spacing between the electrodes so that the arc can be essentially continuously operated at an essentially constant voltage; and
collecting the gas to obtain the supply of combustible gas.

10 17. The method of claim 16, which further comprises replenishing the consumable carbon anode as it is consumed so that the arc can be essentially continuously operated at a constant voltage.

18. The method of claim 16, wherein the fluid comprises a carbonaceous material.

15 19. The method of claim 18, wherein the carbonaceous material comprises coal, sewage, a hydrocarbon, or a glycol, and is optionally present in the fluid in combination with a surfactant.

20 20. The method of claim 18, which further comprises directing the fluid through the arc to optimize conversion of the carbonaceous material.

21. The method of claim 16, wherein the fluid is pumped through the arc at a rate sufficient to reduce arc temperature and prolong electrode life.

25 22. An apparatus for obtaining a supply of a combustible gas having enhanced combustion properties comprising:

a fluid containing a carbonaceous material therein;

a vessel for retaining the fluid therein;

spaced electrodes positioned in the in the vessel fluid;

30 means for creating an electric arc between the spaced electrodes to generate a combustible gas; and

means for collecting the gas for obtaining the supply of the gas.

23. The apparatus of claim 22, wherein the electrodes comprise a cathode and an anode, and wherein the anode comprises a carbon material.

5 24. The apparatus of claim 23, further comprising means for moving the carbon anode toward the cathode at a rate sufficient to maintain the distance therebetween so that the arc can be continuously operated at an essentially constant voltage.

10 25. The apparatus of claim 23, further comprising means for replenishing the carbon anode so that the arc can be operated continuously.

26. The apparatus of claim 22, further comprising means for directing the fluid through the arc to optimize conversion of the carbonaceous material to the gas.

15 27. The apparatus of claim 26, wherein the directing means comprises a pump and the carbonaceous material comprises coal, sewage, a hydrocarbon, or a glycol, optionally in combination with a surfactant.

20 28. The apparatus of claim 22, wherein the means for collecting the gas comprises a vent in an upper portion of the vessel.

29. An apparatus for obtaining a supply of a combustible gas having enhanced combustion properties comprising:

means for creating an electric arc between spaced electrodes under a fluid, wherein at least one electrode is an anode of consumable carbon material;

25 means for moving the anode to maintain the spacing between the electrodes so that the arc can be essentially continuously operated at an essentially constant voltage; and

means for collecting the gas to obtain the supply of combustible gas.